

of time than the main unit, such as photoconductor drums, photoconductor units, replacement lamps, and fuser rollers of image forming apparatus such as copiers and printers. It is desired that empty containers of many of these consumable parts be collected. Regarding copier toner, for example, the containers and packing boxes of toner are desired to be collected.

[Flow of toner cartridges]

FIG. 1 is a diagram illustrating flow of toner cartridges.

In FIG. 1, toner cartridges produced at a factory 11 of a manufacturer 1 according to a production plan are sent to a warehouse 12 of the manufacturer as needed. When an order is received by the manufacturer 1 from a seller 3, it may take a lot of days to make a delivery to the seller 3 (or seller's warehouse). The seller 3 can make a delivery to a user 4 in a day (on the day after the order) at the latest as long as the ordered goods are in stock.

On the other hand, there is no established route for collection of used toner cartridges. As described above, there are various routes including a route via the seller 3 and direct route from the user 4 to the manufacturer 1. Also, it seems that many used toner cartridges are uncollected due to the problem of labor and cost involved in collection.

FIG. 2 is a diagram showing the flow of toner cartridges according to this embodiment.

In FIG. 2, toner cartridges produced at the factory 11 of the manufacturer 1 according to a production plan are sent to a master warehouse 5 of the manufacturer as needed. The toner cartridges are placed in the master warehouse 5, and then distributed to branch warehouses 6 scattered over various locations according to a shipment schedule described later. Although details will be described later, when an order is received from the user 4, toner cartridges are delivered from a branch warehouse 6 to the user 4. At the time of delivery, used toner cartridges are collected according to the user's 4 wishes and placed temporarily in a branch warehouse 6 or the master warehouse 5, but details will be described later. Later, the used toner cartridges placed in the branch warehouse 6 or master warehouse 5 are sent to a collection center 7 from the branch warehouse 6 or master warehouse 5 at a designated time and recycled there.

The master warehouse 5 shown in FIG. 2 is the primary warehouse central to the flow of toner cartridges and is operated by the manufacturer 1, the seller 3, a distributor, or the like. It is desirable that the branch warehouses 6 which serve as contact points with the user 4 should be operated by distributors. The collection center 7 which is a center of recycling is operated by the manufacturer 1 or a recycler.

A shared database (DB) 8 centrally controls physical distribution which includes production at the factory 11;

inventories in the master warehouse 5 and branch warehouses 6; orders by the user 4; and collection carried out among the factory 11, master warehouse 5, branch warehouses 6, user 4, and collection center 7. The central control by the use of the shared DB 8 is aimed at realizing proper production, inventory, and physical distribution, at enabling, for example, next day delivery of the toner cartridges ordered by the user 4, at ensuring that collected toner cartridges will be delivered to the collection center 7 in the right quantities at the right time, and so on. The information provided by the shared DB 8 corresponds to information stored in an auxiliary storage 1505 in FIG. 15, described later.

Incidentally, the seller 3 may not participate in the flow of toner cartridges itself, but does participate in data flow in the sales and collection system, described later.

Implementing a flow of toner cartridges such as the one shown in FIG. 2 into a system ensures that toner cartridges will be available to users in a short period. This makes it easy to maintain the inventories of various toner cartridges at offices and business places which use various types of printer, copier, and facsimile machine. Furthermore, in the case of small offices and business places, a toner cartridge may be ordered when prompted by a printer or the like to replace the toner cartridge after the remaining quantity of toner falls below a certain